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⑭ 考案の名称 ステッピングモーターのリードスクリュー

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㉒ 実用新案登録請求の範囲

階段状の溝を有するステッピングモーターのリードスクリューにおいて、階段部を連結する連結部を階段部に近づくに従い軸方向と直角な方向に傾く曲線としたことを特徴とするステッピングモーターのリードスクリュー。

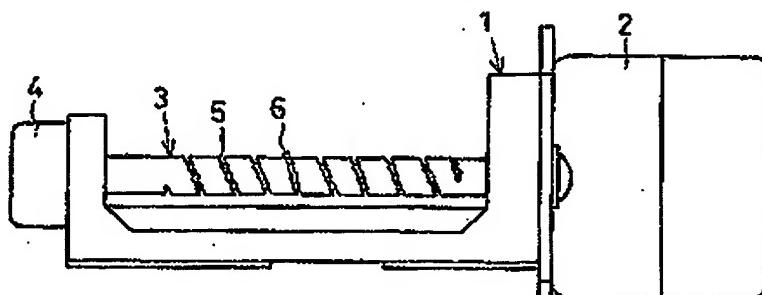
㉓ 図面の簡単な説明

図面は本考案の一実施例が示され、第1図はステッピングモーターとリードスクリューの側面

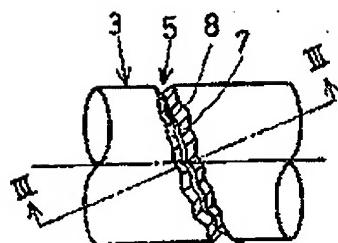
図、第2図はリードスクリューの要部拡大側面図、第3図は第2図のⅢ-Ⅲ断面線の構造とガイドバーの断面正面図、第4図は階段部に近づくに従い軸方向と直角な方向に傾く連結部の曲線説明図である。

1……ステッピングモーター、2……リードスクリュー、5……階段状の溝、7……階段部、8……連結部、9……歯線。

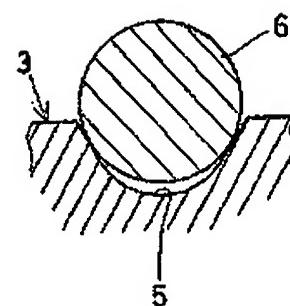
第1図



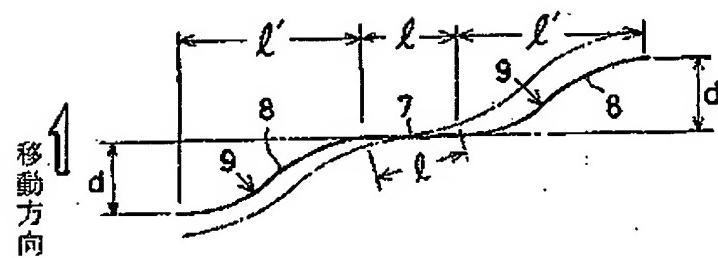
第2図



第3図



第4図



Japanese Utility Model Laid Open No. 74475/1987

Japanese Utility Model Laid Open No. 74475/1987

Lead screw of a stepping motor

What is claimed is:

A lead screw of a stepping motor characterized in that in the lead screw of the stepping motor with a stairs-shaped groove, a stairs part curves to the right angles of the shaft direction when a connection part approaches a stairs part connected thereto.

Description of the Utility model

This idea relates to a lead screw of a stepping motor.

Prior Art

Some stepping motors are formed with a stairs-shaped groove in lead screw to use for the so-called intermission feed mechanism such as the head positioning mechanism of the floppy disk. For example Utility model JP 55-170548 A discloses that a spiral-shaped groove part is held in the drum, and that groove part makes stairs-shaped, and it is the structure that it is positioned in the shaft and the horizontal part. Utility model JP 56-172856 A discloses that a plural of the groove parts with a straight line-shaped groove bottom are formed along the round direction, that a spiral-shaped groove is formed by moving these groove parts in the shaft direction one after another to determine the positioning of the intermission feed.

Because all the groove parts become straight line-shaped stairs-shaped, when a guide bar is transferred from the straight line-shaped stairs part to the next straight line-shaped stairs part, noise comes out from the unsmooth movement of the guide bar, on top of the defect of the duration. Because extreme amount of power is required to drive a lead screw, there is a disadvantage of energy saving.

Purpose

In consideration of the above disadvantage, this idea is to propose a lead screw of a stepping motor, improves the form of the groove of the lead screw with stairs-shaped holes for the smooth movement of the guide bar. The lead screw of a stepping motor is characterized in that in the lead screw of the stepping motor with a stairs-shaped groove, a stairs part curves to the right angles of the shaft direction when a connection part approaches a stairs part connected thereto.

Embodiment

This idea is explained hereafter in embodiment 1 as shown. The stepping motor 2 is fixed on stepper frame 1 as the first figure, as for the lead screw of the stepping motor, the shaft of the stepping motor 2 is formed by a lead screw 3. A bearing is done with a bearing 4 of stepper frame 1, and it has the tip of the lead screw 3 formed by a spiral-shaped 5 such as the first figure and the second figure in the lead screw 3. The guide bar 6 fixed on the head carriage which isn't illustrated in the stairs-shaped groove 5 of the upside of the lead screw 3 or the bottom side is fitted to the charge. The stairs-shaped groove 5 of the lead screw 3 is formed in the connection department 8 which connects a stairs department 7 with the stairs department 7 such as the second figure and the fourth figure, and a connection department 8 follows in approaching a stairs department 7, and formed by the curve 9 which leans in the direction which is at right angles to the shaft direction. Partial L which is more applicable to the stairs department 7 as the fourth figure is straight with it, it follows in for example partial L' which is applicable to the connection department 8 approaching a stairs department 7 in the autograph curve, a curve 9 is formed with the curve 9 which leans in the

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direction which is at right angles to the shaft direction. When a lead screw 3 is turned, or it withdraws, and positioning of the intermission feed is made with the guide bar 6 where a charge is fitted to the stairs-shaped groove 5 in partial L' which is applicable to the connection department 8 in partial L which is applicable to the stairs department 7. As mentioned above when a head carriage is sent in the guide bar 6 and a guide bar 6 is transferred from the stairs department 7 to the connection department 8 and when the stairs-shaped groove 5 of the lead screw 3 is moved from connection-gum 8 to the stairs department 7. Because it is moved smoothly with a curve 9 of the autograph curve which leans in the direction which is at right angles to the shaft direction and the excessive power doesn't function in the lead screw 3 and the guide bar 6, the durability of the guide bar 6 is improved with noise's not making. The efficiency of the necessary torque is good for rotating a lead screw 3, and the big power becomes unnecessary. You may form a connection department 8 by the above explanation in the curve except for the autograph curve though it followed in approaching a stairs department 7, for example an autograph curved. You may try not to set up direct partial L, which is at right angles to the shaft direction by continuing the curve 9 of the connection department 8 and setting it up at all. And, you may take a groove like the fourth figure alternate long and short dash line curve which leaned in the direction which was at right angles to the shaft direction. As mentioned above, without excessive tension being applied to a guide bar to fit a charge to the stairs-shaped groove by the rotation of the lead screw and which is sent, and the lead screw, it is moved smoothly, as for this idea, torque efficiency is improved. It can provide the lead screw of the stepping motor with the excellent effect in utility.

Brief explanation of the drawings

Embodiment 1 of this idea is shown in the drawing, and the side view of the stepping motor and the lead screw and the second figure are the point department expansion side views of the lead screw as for the first figure. It follows in the groove of the second figure III—III section line and the section front elevation of the guide bar and the fourth figure approaching a stairs part, and the third figure is the curve explanatory drawing of the connection part inclined in the direction which is at right angles to the shaft direction.